

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BOARD OF PATENT APPEALS AND INTERFERENCES

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PATENT

In Re Application of:

Fender *et al.*

Serial No.: 10/606,897

Filed: June 26, 2003

For: SYSTEM AND METHOD FOR
PERFORMING MULTI-SOURCE
MEASUREMENTS

Group Art Unit: 2863

Examiner: Bhat, Aditya

Confirmation No. 6585

Docket No.: 10030339-1

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APPEAL BRIEF UNDER 37 C.F.R. §1.192

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Sir:

This is an appeal from the decision of Examiner Aditya Bhat, Group Art Unit 2863,
mailed May 16, 2005, rejecting claims 21-39 in the present application and making the
rejection FINAL.

I. REAL PARTY IN INTEREST

The real party in interest of the instant application is Agilent Technologies.

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II. RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

III. STATUS OF THE CLAIMS

Claims 1-20 are canceled in the present application and claims 21-39 are pending. Claims 21-24, 26-33, and 35-39 stand rejected under 35 U.S.C. §102(b) as allegedly being anticipated by *Taraki et al.* (U.S. Patent No. 5,898,307). Claims 25 and 34 stand rejected under 35 U.S.C. §103(a) as allegedly being unpatentable over *Taraki et al.* (U.S. Patent No. 5,898,307) in view of *Miller et al.* (U.S. Patent No. 6,791,545). Thus, all pending claims 21-39 stand rejected.

IV. STATUS OF AMENDMENTS

No amendments have been made or requested since the mailing of the FINAL Office Action and all amendments submitted prior to the FINAL action have been entered. A copy of the current claims is attached hereto as Exhibit A.

V. SUMMARY OF CLAIMED SUBJECT MATTER

Generally, the invention of the present application is directed to performing “multi-source measurements”. Stated another way, the present application teaches performing measurements between multiple waveforms. As shown in FIGS. 8A-8D, the present application discusses four examples of multi-source measurements that can be made between two different waveforms. For example, the present application can measure set-up time (FIG. 8A) *from one waveform to another*, hold-time (FIG. 8B) *from one waveform to another*, time difference (FIG. 8C) *from a point on one waveform to a point on another waveform*, or phase difference (FIG. 8D) *between the two waveforms*.

FIG. 1 broadly illustrates the measurement system 100, which includes a measurement and testing instrument (MTI) 102 and a device under test (DUT) 104. FIGS. 5A-6B illustrate examples of a first waveform 506A, a second waveform 506B, and measurement icons 508, 509, 510, 511 displayed in regions of a graphical user interface (GUI) 500. FIGS. 2-4 illustrate flow charts of multi-source measurement methods.

Claim 21:

Claim 21 is directed to a method including displaying a first waveform 506A, a second waveform 506B (FIGS. 5A-6B), and a plurality of icons 508, 509, 510, 511 (FIGS. 5A-6B). The method also includes enabling a user to select one of the plurality of icons (paragraphs 00021, 00023, 00026), enabling a user to mark a first point on the first waveform (paragraphs 00021, 00023, 00026), and enabling a user to mark a second point on the second waveform (paragraphs 00022, 00025, 00028). Finally, the method includes performing a measurement based on the selected icon, the first point, and the second point (paragraphs 00022, 00025, 00029).

Claim 25:

Claim 25 is a dependent claim that includes all the features of independent claim 21. In addition, claim 25 states that enabling the user to mark the first and second points further comprises placing markers on the first and second points, where the markers are similar in appearance to the selected icons. This feature of claim 25 is illustrated in FIGS. 5B-6B, where the selected icon (having a similar appearance to the selected icon) is placed at the selected locations on the two waveforms. This feature is also described in paragraphs 00020-00023, 00026-00028, and 00033.

Claim 28:

Claim 28 is directed to a measuring and testing instrument (MTI) 102, which is illustrated, for example, in FIG. 9A. The MTI 102 comprises a display device, means for receiving user input, and means for measuring a parameter based on a selected icon, a first point, and a second point. The display device 103 is configured to display a first waveform (FIGS. 5A-6B; 506A), a second waveform (FIGS. 5A-6B; 506B), and a plurality of icons (FIGS. 5A-6B; 508, 509, 510, 511). The means for receiving user input corresponds at least to the user-input interface 924 shown in FIG. 9A. The means for measuring the parameter corresponds at least to the measurement invocation system 918, which is described, for example in paragraph 00060.

Claim 34:

Claim 34 is a dependent claim that depends indirectly from independent claim 28 and includes the subject matter of claims 28 and 33. Claim 33 includes the aspect of the display device being configured to display a first mark representing the selected first point and a second mark representing the selected second point. These marks correspond to the icons dropped at the selected locations on the two waveforms (FIGS. 5B-6B). Claim 34 recites that the first and second marks are similar in appearance to the selected icon, as shown in FIGS. 5B-6B and as described at least in paragraph 00020.

Claim 36:

Claim 36 is directed to a graphical user interface (GUI) 500, which is shown, for example, in FIGS. 5A-6B. The GUI comprises a waveform display region 502 and a toolbar region 504 (paragraph 00030). The first waveform 506A and second waveform 506B are displayed in the waveform display region 502 (FIGS. 5A-6B). A plurality of icons 508, 509, 510, 511 are displayed in the toolbar region. The GUI further includes a first marker displayed on a first point of the first waveform and a second marker displayed on a second point of the second waveform, which corresponds to the icon dropping shown in FIGS. 5B-6B.

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

The first issue on appeal is the rejection of claims 21-24, 26-33, and 35-39 under 35 U.S.C. §102(b) as allegedly being anticipated by *Taraki et al.* (U.S. Patent No. 5,898,307).

The second issue on appeal is the rejection of claims 25 and 34 under 35 U.S.C. §103(a) as allegedly being unpatentable over *Taraki et al.* (U.S. Patent No. 5,898,307) in view of *Miller et al.* (U.S. Patent No. 6,791,545).

VII. ARGUMENT

In general, the prior art of record fails to measure any parameter between two different waveforms. Instead, all measurements in the prior art are based on characteristics of individual waveforms. The claims, set forth below, include features relating to this general concept of measuring a parameter between waveforms and are therefore believed to be allowable over the prior art of record.

A. **Discussion of Claims 21-27**

1. **Independent Claim 21 and Dependent Claims 22-24, 26, and 27**

Independent claim 21 is directed to a method, which displays first and second waveforms. The method further comprises displaying a plurality of icons, each icon corresponding to *a measurement to be performed of a parameter defining a relationship between the first waveform and the second waveform*. *Taraki et al.* fails to teach this claimed feature in at least the following respects.

Taraki et al. fails to disclose *a parameter defining a relationship between the first waveform and the second waveform*. Instead, *Taraki et al.* only measures parameters with respect to a single waveform. Although, *Taraki et al.* displays two waveforms simultaneously and can synchronize cursors 41 and 51 with cursors 41a and 51a (see FIG. 3), *Taraki et al.* fails to measure a parameter that relates the first waveform with the second waveform. Instead, points on each waveform can be measured with respect to other points on the same waveform. Each waveform is therefore measured individually.

In addition, the elements described to be “icons” by *Taraki et al.* are actually boxes in which text or other indicia may be displayed (col. 3, lines 43-44). The icons do not correspond to *a measurement to be performed*, as claimed. Apparently, the icons of *Taraki et al.* correspond to display modes, e.g. Lab Scope mode, Freeze display mode, and Live mode (see col. 3, lines 41-63). However, *Taraki et al.* fails to disclose icons that correspond to *a measurement to be performed*, and particularly to a measurement of *a parameter defining a relationship between the first waveform and the second waveform*, as claimed.

Claim 21 also includes *performing a measurement based on the selected icon, the first point on the first waveform, and the second point on the second waveform*. *Taraki et al.* fails to disclose the claimed feature of performing a measurement based on a selected icon, a first point on the first waveform, and a second point on the second waveform. Not only does *Taraki et al.* fail to provide selecting an icon corresponding to a measurement to be performed, but also fails to perform a measurement based on a selected icon or one based on points from two different waveforms. Instead, all measurements by *Taraki et al.* are based on characteristics of the same waveform.

For at least these reasons, Applicants believe that claim 21 is allowable over *Taraki et al.* Claims 22-27 are allowable for at least the reason that they depend from allowable independent claim 21.

2. Dependent Claim 25

It is believed that independent claim 21 is allowable over *Taraki et al.* for reasons presented above. It is further believed that *Miller et al.* does not overcome the above-noted deficiencies of *Taraki et al.* with respect to this independent claim. Thus, it is believed that claim 21 is allowable over *Taraki et al.* and *Miller et al.*, taken alone or in combination, and that dependent claim 25 is allowable for at least the reason that this claim depends from allowable independent claim 21.

Miller et al. seems to teach an oscilloscope having measurement icons displayed thereon. The oscilloscope displays the waveform being tested and a number of icons that show the measurements of the waveform. Each icon is a miniature rendering of the corresponding measurement. A user can select an icon to display the measurement at full size on the display. *Miller et al.* fails to teach or suggest that each icon corresponds to a ***measurement to be performed***, as claimed. Instead, *Miller et al.* teaches displaying icons of measurements already made. *Miller et al.* does not teach an icon that directs which future measurement are to be performed. In other words, *Miller et al.* simply discloses a display strategy, but does not allow a user to select how measurements are to be performed.

Also, *Miller et al.* fails to teach or suggest performing a measurement based on a selected icon, a first point on a first waveform, and a second point on a second waveform, as claimed in claim 21, and fails to teach or suggest means for measuring a parameter based on a selected icon, a first point of a first waveform, and a second point of a second waveform, as claimed in claim 28. As discussed above, *Taraki et al.* fails to teach or suggest these claimed features as well.

Furthermore, claim 25 includes additional aspects that are neither taught nor suggested by the combination of *Taraki et al.* and *Miller et al.* For example, *Taraki et al.* and *Miller et al.* fail to disclose ***markers*** placed on the first and second points, the markers being ***similar in appearance to the selected icon***, as claimed. Accordingly, for at least these reasons, claim 25 is believed to be allowable over the combination of *Taraki et al.* and *Miller et al.*

B. Discussion of Claims 28-35

1. Independent Claim 28 and Dependent Claims 29-33 and 35

Independent claim 28 is directed to a measuring and testing instrument (MTI) comprising a display device, means for receiving user input, and means for measuring. The display device is configured to display a first waveform, a second waveform, and a plurality of icons, *each icon corresponding to a measurement to be performed of a parameter defining a relationship between the first waveform and the second waveform*. *Taraki et al.* fails to teach this claimed feature in at least the following respects.

Taraki et al. fails to disclose *a parameter defining a relationship between the first waveform and the second waveform*. Instead, *Taraki et al.* only measures parameters with respect to a single waveform. Although, *Taraki et al.* displays two waveforms simultaneously and can synchronize cursors with respect to the two waveforms, *Taraki et al.* fails to measure a parameter that relates the first waveform with the second waveform. Instead, each waveform is measured individually.

In addition, the elements described to be “icons” by *Taraki et al.* are actually boxes in which text or other indicia may be displayed (col. 3, lines 43-44). The icons do not correspond to *a measurement to be performed*, as claimed. Apparently, the icons of *Taraki et al.* correspond to display modes, e.g. Lab Scope mode, Freeze display mode, and Live mode (see col. 3, lines 41-63). *Taraki et al.* fails to disclose icons that correspond to *a measurement to be performed*, and particularly a measurement of *a parameter defining a relationship between the first waveform and the second waveform*, as claimed.

Claim 28 also includes *means for measuring a parameter based on the selected icon, the first point, and the second point*, in which the first point is a point on the first waveform and the second point is a point on the second waveform. *Taraki et al.* fails to disclose this claimed feature of measuring a parameter that is based on a selected icon, a first point on the first waveform, and a second point on the second waveform. Not only does *Taraki et al.* fail to provide selecting an icon corresponding to a measurement to be performed, but also fails to measure a parameter based on a selected icon or one based on points from two different waveforms. Instead, all measurements by *Taraki et al.* are based on characteristics of the same waveform.

For at least these reasons, Applicants believe that claim 28 is allowable over *Taraki et al.* Claims 29-35 are allowable for at least the reason that they depend from allowable independent claim 28.

2. Dependent Claim 34

It is believed that independent claim 28 is allowable over *Taraki et al.* for reasons presented above. It is further believed that *Miller et al.* does not overcome the above-noted deficiencies of *Taraki et al.* with respect to these independent claims. Thus, it is believed that claim 28 is allowable over *Taraki et al.* and *Miller et al.*, taken alone or in combination, and that dependent claim 34 is allowable for at least the reason that this claim depends from allowable independent claim 28.

Miller et al. seems to teach an oscilloscope having measurement icons displayed thereon. The oscilloscope displays the waveform being tested and a number of icons that show the measurements of the waveform. Each icon is a miniature rendering of the corresponding measurement. A user can select an icon to display the measurement at full size on the display. *Miller et al.* fails to teach or suggest that each icon corresponds to a ***measurement to be performed***, as claimed. Instead, *Miller et al.* teaches displaying icons of measurements already made. *Miller et al.* does not teach an icon that directs which future measurement are to be performed. In other words, *Miller et al.* simply discloses a display strategy, but does not allow a user to select how measurements are to be performed.

Also, *Miller et al.* fails to teach or suggest performing a measurement based on a selected icon, a first point on a first waveform, and a second point on a second waveform, as claimed in claim 21, and fails to teach or suggest means for measuring a parameter based on a selected icon, a first point of a first waveform, and a second point of a second waveform, as claimed in claim 28. As discussed above, *Taraki et al.* fails to teach or suggest these claimed features as well.

Furthermore, claim 34 includes additional aspects that are neither taught nor suggested by the combination of *Taraki et al.* and *Miller et al.* For example, *Taraki et al.* and *Miller et al.* fail to disclose ***marks*** placed on the first and second points, the marks being ***similar in appearance to the selected icon***, as claimed. Accordingly, for at least these reasons, claim 34 is believed to be allowable over the combination of *Taraki et al.* and *Miller et al.*

C. **Discussion of Claims 36-39**

Independent claim 36 is directed to a graphical user interface (GUI) comprising a waveform display region and a toolbar region. The toolbar region displays a plurality of icons, *each icon corresponding to a measurement to be performed of a parameter defining a relationship between the first waveform and the second waveform*. *Taraki et al.* fails to teach this claimed feature in at least the following respects.

Taraki et al. fails to disclose *a parameter defining a relationship between the first waveform and the second waveform*. Instead, *Taraki et al.* only measures parameters with respect to a single waveform. Although, *Taraki et al.* can display two waveforms simultaneously and synchronize cursors 41 and 51 for one waveform with cursors 41a and 51a of another (see FIG. 3), *Taraki et al.* fails to measure a parameter that relates the first waveform with the second waveform. Instead, each waveform is measured individually.

In addition, the elements described to be “icons” by *Taraki et al.* are actually boxes in which text or other indicia may be displayed (col. 3, lines 43-44). The icons do not correspond to *a measurement to be performed*, as claimed. Apparently, the icons of *Taraki et al.* correspond to display modes, *e.g.* Lab Scope mode, Freeze display mode, and Live mode (see col. 3, lines 41-63). However, *Taraki et al.* fails to disclose icons that correspond to *a measurement to be performed*, and particularly a measurement of *a parameter defining a relationship between the first waveform and the second waveform*, as claimed.

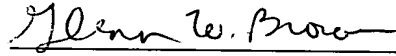
For at least these reasons, Applicants believe that claim 36 is allowable over *Taraki et al.* Claims 37-39 are allowable for at least the reason that they depend from allowable independent claim 36.

CONCLUSION

Based upon the foregoing discussion, Applicants respectfully requests that the Examiner's final rejection of claims 21-39 be overruled and withdrawn by the Board, and that the application be allowed to issue as a patent with all pending claims.

Please charge Agilent's deposit account in the amount of \$330 for the filing of this Appeal Brief. No additional fees are believed to be due in connection with this Appeal Brief. If, however, any additional fees are deemed to be payable, you are hereby authorized to charge any such fees to deposit account No. 50-1078.

Respectfully submitted,



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VIII. CLAIMS - APPENDIX

1-20. (Canceled)

21. A method comprising:

displaying a first waveform and a second waveform;

displaying a plurality of icons, each icon corresponding to a measurement to be performed of a parameter defining a relationship between the first waveform and the second waveform;

enabling a user to select one of the plurality of icons;

enabling the user to mark a first point on the first waveform;

enabling the user to mark a second point on the second waveform;

performing a measurement based on the selected icon, the first point on the first waveform, and the second point on the second waveform.

22. The method of claim 21, wherein the parameter is one of a set-up time, a hold-time, a time difference, and a phase difference.

23. The method of claim 22, further comprising:

displaying the measured parameter.

24. The method of claim 21, wherein enabling the user to mark the first and second points further comprises:

responding to a user-manipulated pointing device, the pointing device comprising one of a mouse, a joy-stick, a track-ball, a keyboard, a touch-screen, and a touch-pad.

25. The method of claim 21, wherein enabling the user to mark the first and second points further comprises:

placing markers on the first and second points, the markers being similar in appearance to the selected icon.

26. The method of claim 21, wherein displaying the first and second waveforms further comprises:

receiving first and second signals from a device under test, the first and second signals corresponding to the first and second waveforms, respectively.

27. The method of claim 21, further comprising:
enabling the user to set a measurement threshold based on a percentage of change of one of the first and second waveforms.

28. A measuring and testing instrument (MTI) comprising:
a display device configured to display a first waveform, a second waveform, and a plurality of icons, each icon corresponding to a measurement to be performed of a parameter defining a relationship between the first waveform and the second waveform;
means for receiving user input, the user input corresponding to a selected first point on the first waveform, a selected second point on the second waveform, and a selected icon; and
means for measuring a parameter based on the selected icon, the first point, and the second point.

29. The MTI of claim 28, wherein the measured parameter is one of a set-up time; a hold-time, a delay, and a phase difference.

30. The MTI of claim 29, wherein the display device is further configured to display the measured parameter.

31. The MTI of claim 28, further comprising a pointing device allowing a user to select the first point on the first waveform, the second point on the second waveform, and one of the displayed icons.

32. The MTI of claim 31, wherein the pointing device is one of a mouse, a joy-stick, a track-ball, a keyboard, a touch-screen, and a touch-pad.

33. The MTI of claim 28, wherein the display device is further configured to display a first mark representing the selected first point on the first waveform and a second mark representing the selected second point on the second waveform.

34. The MTI of claim 33, wherein the first and second marks are similar in appearance to the selected icon.

35. The MTI of claim 28, further comprising an oscilloscope configured to receive the first and second waveforms from a device under test.

36. A graphical user interface (GUI) for use with a measurement device, the GUI comprising:

a waveform display region for displaying a first waveform and a second waveform;
and

a toolbar region for displaying a plurality of icons, each icon corresponding to a measurement to be performed of a parameter defining a relationship between the first waveform and the second waveform;

wherein, by manipulation of a pointing device, a first marker is displayed on a first point of the first waveform and a second marker is displayed on a second point of the second waveform.

37. The GUI of claim 36, further comprising an information region for displaying a type of measurement being performed based on a selected icon.

38. The GUI of claim 36, further comprising a result region for displaying results of a measurement.

39. The GUI of claim 36, wherein the first and second markers are positioned over the first and second waveform, respectively, by a drag-and-drop process.

IX. EVIDENCE - APPENDIX

None.

IX. RELATED PROCEEDINGS- APPENDIX

None.